CLAIMS

What is claimed is:

5   1. A method for fault diagnosis of a data network
comprising:
        a) receiving a plurality of fault data pertaining to
said data network;
        b) filtering said plurality of fault data to obtain a
10 core of fault data; and
        c) analyzing said core of fault data to identify a
fault associated with said core of fault data.

       2. The method for fault diagnosis as described in Claim
15 1, wherein b) comprises:
        implementing a set of rules for filtering said plurality
of fault data.

       3.   The method for fault diagnosis as described in
20 Claim 1, wherein b) comprises:
        eliminating redundant fault data in said plurality of
fault data to obtain said core of fault data.

       4.   The method for fault diagnosis as described in
25 Claim 1, wherein said b) comprises:

b1) correlating said plurality of fault data into
recognized patterns of data comprising said core of fault
data.

5   5.   The method for fault diagnosis as described in
Claim 1, wherein said plurality of fault data is taken from a
group consisting of:

        alarms;

        events;

10   remote monitoring (RMON)-1 data; and

        RMON-2 data.

        6.   The method for fault diagnosis as described in
Claim 1, wherein c) further comprises:

15   determining whether said fault is due to a broken link
or congestion in said data network.

        7.   The method for fault diagnosis as described in
Claim 6, further comprising:

20   implementing a ping walk through said data network to
determine a location of said broken link, if said fault is
due to said broken link.

        8.   The method for fault diagnosis as described in
25 Claim 6, further comprising:

        isolating a source of said fault, if said fault is due
to said congestion in said data network.

9.   The method of fault diagnosis as described in Claim 1, further comprising:

    displaying network location of said fault; and

5   displaying a cause of said fault.

10.   The method of fault diagnosis as described in Claim 1, wherein said fault data includes performance data from said data network.

11.   A method of fault diagnosis comprising:

    a)   receiving a plurality of fault data pertaining to said data network;

    b)   filtering said plurality of fault data to eliminate
15 extraneous data down to a core of fault data; and

    c)   determining whether said core of fault data is due to a broken link or congestion in said data network;

    d)   performing a ping walk to isolate a cause and a source of said core of fault data and to determine a location
20 of said source, if said core of fault data is due to said broken link; and

    e)   using deductive reasoning to isolate said source of said core of fault data and identify said cause of said core of fault data, if said core of fault data is due to said
25 congestion.

12.   The method for fault diagnosis as described in

Claim 11, wherein b) comprises:

eliminating redundant fault data in said plurality of

fault data to obtain said core of fault data.

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13.   The method for fault diagnosis as described in

Claim 11, wherein b) comprises:

b1)   correlating said plurality of fault data into a

recognized pattern of data forming said core of fault data.

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14.   The method for fault diagnosis as described in

Claim 11, wherein d) comprises:

sending a ping signal to each of a plurality of

addresses in said data network;

15   determining which addresses are unreachable; and

comparing a network topology to unreachable addresses to

determine a location of said broken link in said data

network.

20   15.   The method for fault diagnosis as described in

Claim 11, wherein e) comprises:

e1)   monitoring said data network to determine traffic

data; and

e2)   analyzing said traffic data using said deductive

25   reasoning to isolate said source and identify said fault.

16.   The method for fault diagnosis as described in Claim 15, wherein e1) comprises:

determining queue length in network devices;

determining delay over a path in said data network; and

5   determining load of traffic over said data network.

17.   The method of fault diagnosis as described in Claim 11, further comprising:

querying said data network for additional fault data if

10   said core of fault data is insufficient to identify said

fault.

18.   The method of fault diagnosis as described in Claim 11, further comprising:

15   correcting said fault.

19.   A data network that is capable of fault diagnosis comprising:

a plurality of subnetworks that generate a plurality of

20   fault data, each of said plurality of subnetworks comprising

network components that are coupled together via a

distributing component;

a plurality of performance managers coupled to said

plurality of subnetworks for monitoring said plurality of

25   subnetworks for said plurality of fault data and for

filtering said plurality of fault data, each of said

plurality of network performance managers coupled to and

associated with one of said plurality of subnetworks; and

a single network management station coupled to each of

said plurality of performance managers for analyzing said

5   plurality of fault data that is filtered to identify faults

and isolate sources of said faults.

20.   The data network as described in Claim 19, wherein

said network components are computer systems.

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21.   The data network as described in Claim 19, wherein

said distributing component is a switch.

22.   The data network as described in Claim 19, wherein

15   said plurality of fault data is management information base

(MIB) information that is generated by said network

components and said distributing component in each of said

plurality of subnetworks.

20   23.   The data network as described in Claim 19, further

comprising:

a rule set that is implemented by said network

management station for analyzing said plurality of fault data

that is filtered to identify said faults and isolate said

25   sources of said faults.

24.   The data network as described in Claim 19, further
comprising:

a rule set that is implemented by each of said plurality
of performance managers for filtering said plurality of fault
5   data.

25.   The data network as described in Claim 19, wherein
said plurality of fault data includes performance data from
said data network.

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26.   The data network as described in Claim 19, wherein
each of said plurality of performance managers is a self
diagnosing network performance manager (SDNNPM)

15   27.   A computer system comprising:
a processor;
a display coupled to said processor;
a computer readable memory coupled to said processor and
containing program instructions that, when executed,
20   implement a method for fault diagnosis of a data network
comprising:

a)   receiving a plurality of fault data pertaining to
said data network;

b)   filtering said plurality of fault data to obtain a
25   core of fault data; and

c)   analyzing said core of fault data to identify a
fault associated with said core of fault data.

28. The computer system as described in Claim 27,
wherein b) in said method comprises:

implementing a set of rules for filtering said plurality
5   of fault data.

29.   The computer system as described in Claim 27,
wherein b) in said method comprises:

eliminating redundant fault data in said plurality of
10   fault data to obtain said core of fault data.

30.   The computer system as described in Claim 27,
wherein b) in said method comprises:

b1)   correlating said plurality of fault data into
15   recognized patterns of data comprising said core of fault
data.

31.   The computer system as described in Claim 27,
wherein said plurality of fault data is taken from a group
20   consisting of:

alarms;

events;

remote monitoring (RMON)-1 data; and

RMON-2 data.

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32.   The computer system as described in Claim 27,
wherein c) in said method further comprises:

determining whether said fault is due to a broken link
or congestion in said data network.

    33.   The computer system as described in Claim 32,
5   wherein said method further comprises:
    implementing a ping walk through said data network to
determine a location of said broken link, if said fault is
due to said broken link.

10   34.   The computer system as described in Claim 32,
wherein said method further comprises:
    isolating a source of said fault, if said fault is due
to said congestion in said data network.

15   35.   The computer system as described in Claim 27,
wherein said method further comprises:
    displaying network location of said fault; and
    displaying a cause of said fault.

20   36.   The computer system as described in Claim 27,
wherein said fault data includes performance data from said
data network.